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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/430,225	10/29/1999	LUCA CARDELLI	1018.029US1	6952

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EXAMINER

DAY, HERNG-DER

ART UNIT PAPER NUMBER

2123

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/430,225

Applicant(s)

CARDELLI ET AL.

Examiner

Herng-der Day

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 1999.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-19 have been examined.

Priority

2. Applicants' claim for domestic priority under 35 U.S.C. 119(e) is acknowledged. The provisional application numbers are:

- (1) 60/125,010, filed on March 18, 1999.
- (2) 60/132,600, filed on May 5, 1999.

Drawings

3. The following drawings are objected to for various reasons. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3-1. The drawing of FIG. 1 is objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: computer 20, random access memory (RAM) 25, and memory storage device 50.

3-2. The drawing of FIG. 1 is objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "24" has been used to designate both ROM and RAM.

3-3. The drawing of FIG. 3 is objected to because the analysis 314, represented by a "?", is not meaningful. The analysis 314 is checked recursively that the process satisfies a formula when enclosed in a surrounding ambient, as described in lines 9-10 of page 35.

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3-4. In FIG. 4, situation 604 is unclear. Either the instruction should be *open n.P* or a process *P* should be added to the left-hand side of the arrow.

3-5. FIG. 6 and FIG. 7, as referred to at page 31, do not exist.

Specification

4. The disclosure is objected to because of the following informalities:

Appropriate correction is required.

4-1. As described in lines 6-8 of page 16, "The fifth statement states that the free names of the input action $(n).P$ are the free names of the process P , minus the name n ". It is actually the sixth statement. The fifth statement has not been stated.

4-2. It appears that "the fourth statement is a logical disjunction", as described in lines 2-3 of page 20, should be "the third statement is a logical disjunction".

3-1. 4-3. As described in lines 11-12 of page 21, "and are derived from the eleventh and twelfth logical formula statements of the logical formulas table", however, the logical formulas table has only ten statements as described in page 19.

4-4. It appears that A' and A'' , as described in lines 21-22 of page 22 and lines 23-24 of page 23, should be A and B respectively.

4-5. It appears that "where "residual" is defined by $P * P'$." as described in line 7 of page 23, should be "where "residual" is defined by $P \rightarrow * P'$."

4-6. As described in line 22 of page 21, "The satisfaction relation $P \models A$ (process P satisfies formula A)". Using \models to represent satisfaction relation is very confusion. For example, at page 27, it is difficult to read the propositional logic (Cut) and the quantifier (\forall -L).

4-7. It appears that “composition A ' B” as described in line 4 of page 34, should be
“composition A | B”

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

First, because the provisional applications are not incorporated by reference lots of operations and functions are used but not defined and disclosed in the specification. For example, Π in lines 7 and 10 of page 29, *Head* in line 8 of page 37, and *Next* in line 3 of page 39. Therefore, it is difficult for one skilled in the art to make and/or use the invention. An explanation (with amendment to the specification if necessary) is required.

Second, a lot of expressions disclosed in the specification are either incomplete or incorrect. For example, ($\square K$) in line 7 of page 28, Corollaries (2) in line 29 of page 29, *Check* ($P, A|B$) in line 5 of page 34, and *Check* (P, A) in line 8 of page 35. Again, it is difficult for one skilled in the art to make and/or use the invention. Also note, the P'' as described in the Fact in line 11 of page 19 is not defined. It is unclear and difficult for one skilled in the art to make and/or use the Fact.

Next, as described in page 23, “iff” within the table is read as “if” in the paragraph following the table. It is unclear what the real meaning of “iff” is. Also note, it is unclear the real meaning of “ \cong ”, which appears in the table of page 22 and some other places, should be read as “iff” or “if”. An explanation (with amendment to the specification if necessary) is required.

Then, as described in lines 5-6 of page 33, “The analysis of 302, 304, 306, 308, 310, 312 and 314 can be summarized as a theorem, specifically, *for all restriction-free process P*”, however, in the following pages only replication-free process are disclosed. Accordingly, it is unclear and difficult for one skilled in the art to decide whether those propositions and normal forms disclosed for the replication-free process are able to be applied to the restriction-free process and support the analysis of 302-314 in FIG. 3? An explanation (with amendment to the specification if necessary) is required.

With the provisional applications not incorporated by reference and lots of undefined functions and incomplete or incorrect expressions are disclosed with unclear meaning of “iff”, claims 1-19 eventually contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8-1. Claims 1-19 recite the limitation “process” in each claim. It is vague and indefinite about the “process” because only restriction-free process is disclosed for model checking, as described in lines 5-8 of page 33 and in FIG. 3. For the purpose of claim examination, the Examiner will presume that “process” as described in claims 1-19 refers to “restriction-free process (or replication-free process, depends on the Applicants’ reply to the question mentioned above in section 6)”.

8-2. Claims 1, 4-9, 11-14, and 16-19 recite the limitation “formula” in each claim. It is vague and indefinite about the “formula” because only \geq -free closed formula is disclosed for model checking, as described in lines 5-8 of page 33 and in FIG. 3. For the purpose of claim examination, the Examiner will presume that “formula” as described in claims 1, 4-9, 11-14, and 16-19 refers to “ \geq -free closed formula”.

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9-1. Claims 1-13 are rejected under 35 U.S.C. 101 because the inventions as disclosed in claims are directed to non-statutory subject matter.

9-2. Regarding claim 1, this claim is directed to “a computer-implemented method operable on a process”. The steps recited in claim 1 describe mathematical algorithms of analyzing the process against a formula and outputting whether the process satisfies the formula. These steps do not: (1) recite data gathering limitations or post-mathematical operations that might

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independently limit the claims beyond the performance of a mathematical operation; or (2) limit the use of any output to a practical application providing a useful, concrete, and tangible result.

9-3. Regarding claims 2-7, the limitations supplied in these claims do not: (1) recite data gathering limitations or post-mathematical operations that might independently limit the claims beyond the performance of a mathematical operation; or (2) limit the use of the output to a practical application providing a useful, concrete, and tangible result. The analysis and conclusion regarding non-statutory subject matter is identical to claim 1 above.

9-4. Regarding claim 8, this claim is directed to “a computer-implemented method”, and the steps recited in claim 8 describe mathematical algorithms of analyzing the process against a formula and outputting whether the process satisfies the formula. These steps do not: (1) recite data gathering limitations or post-mathematical operations that might independently limit the claims beyond the performance of a mathematical operation; or (2) limit the use of any output to a practical application providing a useful, concrete, and tangible result.

9-5. Regarding claim 9, this claim is directed to “a machine-readable medium having instructions stored thereon for execution by a process to perform a method”. However, the steps recited in claim 9 describe inputting a process, mathematical algorithms of analyzing the process against a formula, and outputting whether the process satisfies the formula. These steps do not: (1) recite data gathering limitations or post-mathematical operations that might independently limit the claims beyond the performance of a mathematical operation; or (2) limit the use of any output to a practical application providing a useful, concrete, and tangible result.

9-6. Regarding claims 10-12, the limitations supplied in these claims do not: (1) recite data gathering limitations or post-mathematical operations that might independently limit the claims

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beyond the performance of a mathematical operation; or (2) limit the use of the output to a practical application providing a useful, concrete, and tangible result. The analysis and conclusion regarding non-statutory subject matter is identical to claim 9 above.

9-7. Regarding claim 13, this claim is directed to “a machine-readable medium having instructions stored thereon for execution by a process to perform a method”. However, the steps recited in claim 13 describe mathematical algorithms of analyzing the process against a formula and outputting whether the process satisfies the formula. These steps do not: (1) recite data gathering limitations or post-mathematical operations that might independently limit the claims beyond the performance of a mathematical operation; or (2) limit the use of any output to a practical application providing a useful, concrete, and tangible result.

Allowable Subject Matter

10. Claims 1-19 are not taught exactly by the prior art, and would be allowable if the above rejections under 35 U.S.C. 112, first and second paragraphs and 35 U.S.C. 101 are overcome.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reference to Bonissone et al., U.S. Patent 5,058,033 issued October 15, 1991, is cited as disclosing an automated, rule-based reasoning system and method.

Reference to Codd et al., U.S. Patent 6,421,667 issued July 16, 2002, and filed June 11, 1997, is cited as disclosing a method executing processing logic using a computer system.

Reference to Stanski et al., "Expressing Dynamics of Mobile Agent Systems Using Ambient Calculus", Proceedings of Ninth International Workshop on Database and Expert Systems Applications, August 1998, pages 434-439, is cited as expressing dynamics of mobile agent systems.

Reference to Taguchi et al., "A Calculus based on the Agent-Place Model", Proceedings of Second International Conference on Formal Engineering Methods, December 1998, pages 56-63, is cited as comparing some characteristics of Mobile Ambient calculus with the AP-calculus.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Herng-der Day whose telephone number is (703) 305-526. The examiner can normally be reached on 8:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin J Teska can be reached on (703) 305-9704. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Herng-der Day
October 18, 2002



SAMUEL BRODA, ESQ.
PATENT EXAMINER